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POULTRY RESEARCH BULLETIN 8

The effect of Cascade vs. competitor products on growth performance and *Salmonella* prevalence in 0-to-42-day old broilers



CASCADE

INTRODUCTION

Cascade is an all-natural, highly concentrated blend of yeast components. This unique blend of complex carbohydrates and yeast culture metabolites helps improve gut efficiency and nutrient digestibility while increasing nutrient retention, reducing gut pathogens and supporting immune function. Thus, the poultry industry utilizes products, like Cascade, to increase rate of gain and improve feed conversion ratio in broilers..

The use of complex carbohydrates, such as those in Cascade, have been well-documented in the scientific literature as a means of reducing *Salmonella* prevalence and load in all types and phases of commercial poultry production. Specifically, the mannan-oligosaccharides (MOS) in Cascade bind to *Salmonella* and prevent them from attaching to the gut lining and colonizing the gut. Thus, there is a reduction in *Salmonella* prevalence and load in poultry.

This study was conducted to evaluate the effect of Cascade, compared to two competitor products, on broiler growth performance, carcass characteristics, and *Salmonella* prevalence.

METHODS

► One thousand two hundred, Ross x Ross 708 male day-of-hatch broilers were randomly allotted to treatment groups:

1. Control, no feed additive; 2. Cascade (100 g/ton);
3. Competitor – yeast culture (YC; 750 g/ton); or 4. Competitor – hydrolyzed yeast/yeast culture (HY/YC; 100 g/ton). There were 15 replicate pens per treatment with 20 chicks per pen. Chicks were fed a standard starter diet from day 0 to 14, a standard grower diet from day 14 to 28, and a standard finisher diet from day 28 to 42, including their respective feed additives. Birds and feed were weighed on days 0, 14, 28 and 42 to calculate body weight gain, feed intake, and feed conversion ratio (feed:gain). On day 41, cloacal swabs were collected from five randomly selected birds per pen for determination of *Salmonella* prevalence and load. At the termination of the study, three randomly selected birds per pen were processed to determine carcass percent yield and total percent breast yield.

Broilers were reared on used litter. They were not under a disease or pathogen challenge.

Figure 1. The effect of Cascade on body weight gain of 0 to 14 day old broilers.*

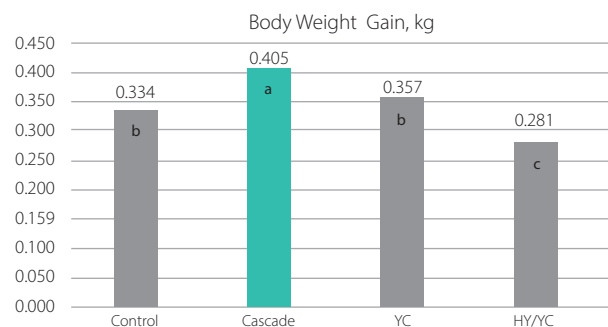
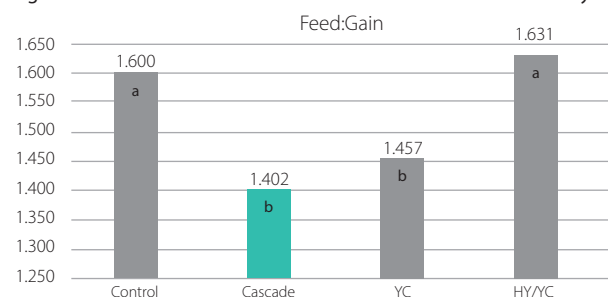


Figure 2. The effect of Cascade on feed conversion ratio of 0 to 14 day old broilers.*



*Data are means of 15 replicates per treatment.

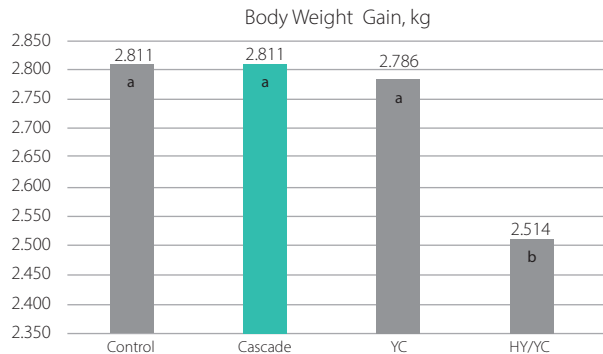
^{a,c}Data with different superscripts are different ($P < 0.01$).

RESULTS

► From day 0 to 14, chicks fed Cascade had higher ($P<0.01$) body weight gain (Figure 1) than chicks fed the control, YC, or HY/YC, and better ($P<0.01$) feed:gain (Figure 2) than chicks fed the control or HY/YC. Broilers fed Cascade had numerically higher ($P=0.13$) body weight gain than broilers fed HY/YC from day 14 to 28. During the finisher phase (day 28 to 42), broilers fed HY/YC had the lowest ($P<0.05$) body weight gain and feed intake, as well as numerically higher ($P=0.114$) feed:gain than broilers fed Cascade. For the overall trial (day 0 to 42), body weight gain

(Figure 3) and feed intake (Figure 4) were higher ($P<0.01$) for broilers fed Cascade or YC than for broilers fed HY/YC. Although not statistically significant, broilers fed Cascade had three points better feed:gain than broilers fed either YC or HY/YC from day 0 to 42 (Figure 5). Percentage carcass yield and percentage total breast meat yield were lowest ($P<0.01$) for broilers fed HY/YC, and similar for broilers fed Cascade or YC (Figure 6). *Salmonella* prevalence (Figure 7) was numerically highest and *Salmonella* load (CFU; Figure 8) was highest ($P<0.05$) for broilers fed HY/YC.

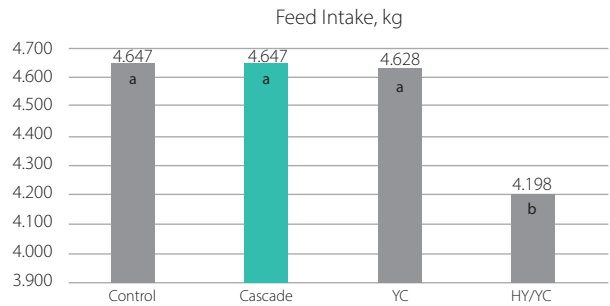
Figure 3. The effect of Cascade on body weight gain of 0 to 42 day old broilers.*



*Data are means of 15 replicates per treatment.

^{a,c}Data with different superscripts are different ($P<0.01$).

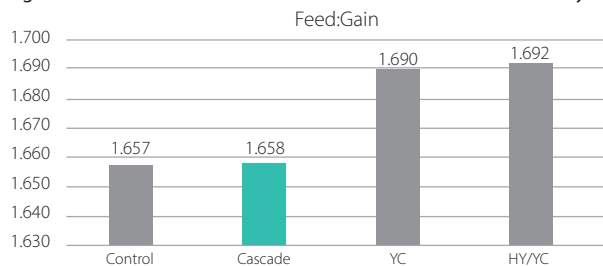
Figure 4. The effect of Cascade on feed intake of 0 to 42 day old broilers.*



*Data are means of 15 replicates per treatment.

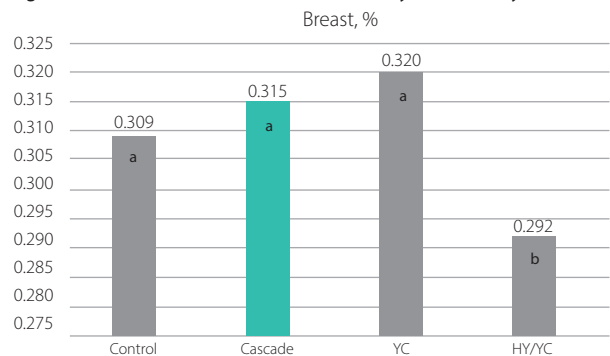
^{a,b}Data with different superscripts are different ($P<0.01$).

Figure 5. The effect of Cascade on feed conversion ratio of 0 to 42 day old broilers.*



*Data are means of 15 replicates per treatment.

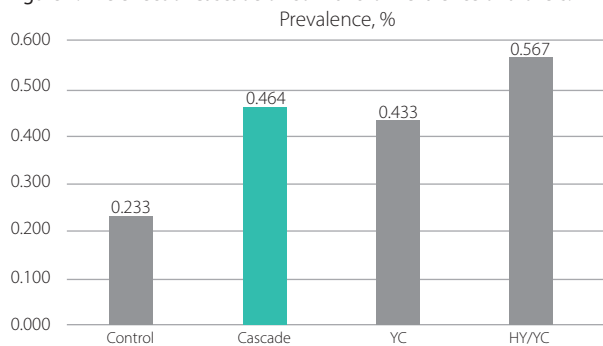
Figure 6. The effect of Cascade on breast meat yield of 42 day old broilers.*



*Data are means of 15 replicates per treatment.

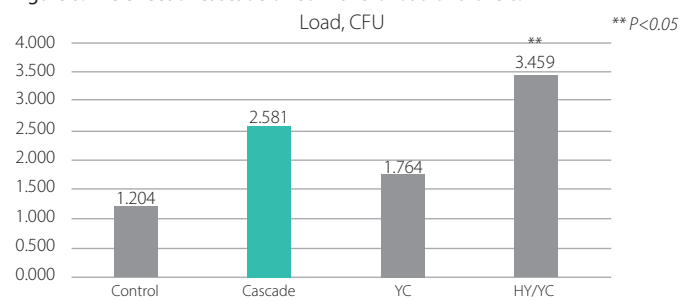
^{a,b}Data with different superscripts are different ($P<0.01$).

Figure 7. The effect of Cascade on *Salmonella* Prevalence of broilers.*



*Data represent the percentage of *Salmonella* positive cloacal swabs from 5 randomly selected birds per pen, or 75 birds per treatment.

Figure 8. The effect of Cascade on *Salmonella* load of broilers.*



*Data represent the CFU of *Salmonella* collected from swabs which tested positive.

** $P<0.05$

IMPLICATIONS

Cascade can be utilized to improve growth performance, carcass yield, and breast meat yield of broilers. Additionally, Cascade can reduce *Salmonella* prevalence and load in live broiler production.



P.O. Box 221
Newfield, NY 14867
844.NAT.BIOL (628.2465)
naturalbiologics.com

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